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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,134	02/20/2002	Ernesto Lasalandra	854063.666	8533

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EXAMINER

HE, AMY

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 06/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/081,134	LASALANDRA ET AL.	
	Examiner	Art Unit	
	Amy He	2858	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on \_\_\_\_.

2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1-23 is/are pending in the application.

    4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-4, 7-12, 14 and 17-22 is/are rejected.

7) ☒ Claim(s) 6, 13, 15, 16 and 23 is/are objected to.

8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

        \* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u>	6) <input type="checkbox"/> Other:

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 2, 4 and 10 are objected to because of the following informalities:
  - (1) Replace "firstand" with --first and--.
  - (2) In claims 2, 4 and 10, "said common detection capacitance" lacks antecedent basis. Note that "common **rest** detection capacitance" is used earlier in the claim.

Appropriate corrections are required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 7-12, 14 and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art by Lemkin, M. et al. ("a Three-Axis Micromachined Accelerometer with a CMOS Position Sense Interface and Digital Offset-Trim Electronics," *IEEE Journal of Solid-State Circuits*, 34(4): 456-468, April 1999), in view of Poduje (U. S. Patent No. 3, 986, 109).

Referring to claims 1-4 and 7-10, applicant admitted prior art (as shown in Figures 1-3 of the present application) discloses a method, for compensating parasitic capacitances, or detecting a movement, of a micro-electric-mechanical sensor (1)

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having a fixed body (2) and a moving mass (3), forming first and second detection capacitors (11 and 12), connected to a common node (15) and to a first and second detection node (13 and 14) respectively and having a common rest detection capacitance and a capacitive unbalance (specification page 3, lines 10-15) following a movement of said moving mass, the method comprising:

feeding said common node with a constant detection voltage ( $V_s$ ) with a predetermined duration; and

maintaining said first and second detection node (13 and 14) at a constant common mode voltage through a feedback voltage (specification page 4, lines 24-25), wherein the feedback voltage feeds through a first and second feedback capacitors (26 and 27 in Figure 3);

detecting or measuring (using amplifying circuit 25 to detect the difference between differential inputs 25b, 25c, specification page 4, lines 20-22) the common rest detection capacitance related to said capacitive unbalance;

generating, and or feeding said common node (15) with, a compensating electric quality (VFB) directly proportional to said common rest detection capacitance in at least one predetermined interval (specification page 9, lines 11-13).

Applicant admitted prior art does not disclose storing a feedback signal and generating or feeding a compensating electric quality that is inversely proportional to said common rest detection capacitance.

Poduje teaches a compensation system (80 in Figure 2) comprising capacitor and amplifiers for storing the feedback signal (using capacitor 84 in Figure 2) and

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generating an electric quality (feedback voltage from feedback system 80 in Figure 2) that is inversely proportional to the common rest detection capacitance.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the prior art to use the compensation system, as taught by Poduje, to store the feedback signal for deriving a signal for further compensation process, such as deriving a compensation signal, inversely proportional to the common rest detection capacitance, to eliminated any errors caused by spurious movements due to mechanical imbalances or disturbances of the MEMS sensor, in order to improve the sensing accuracy of the MEMS sensor.

Referring to claim 11, it is the apparatus claim corresponding to the rejected method claim, claim 1. It is rejected for the same reasons as stated above for the rejection of the method claim.

Referring to claim 17, applicant admitted prior art discloses a method for compensating for effects of spurious movements of an electromechanical sensor in a detection circuit, comprising:

comparing (using amplifying circuit 25 to detect the difference between differential inputs 25b, 25c, specification page 4, lines 20-22)capacitances of first and second detection capacitors formed between a moving mass (3) of the electro-mechanical sensor and a fixed body of the sensor, wherein the moving mass (3) is a common node (15) of the first and second capacitors(11 and 12);

measuring (by using amplifying circuit 25, specification page 4, lines 20-22) a common detection capacitance (Cs) of the sensor; and

introducing a compensation voltage (VFB), directly proportionate to the common detection capacitance, to the common node of the sensor.

Applicant admitted prior art does not disclose introducing a compensating voltage that is inversely proportional to said common rest detection capacitance. Poduje teaches a feedback system (80 in Figure 2) for generating an electric quantity (feedback voltage from feedback system 80 in Figure 2) that is inversely proportional to the common rest detection capacitance. A person of ordinary skill in the art at the time of the invention would find it obvious to modify the prior art to generate a compensating voltage inversely proportional to the common rest detection capacitance, as taught by Poduje, for the same reasons as stated above for the rejection of claim 1.

Referring to claims 20-21, they are the apparatus claims corresponding to the rejected method claims 1, 10 and 17. They are rejected for the same reasons as stated above for the rejection of the method claims.

Referring to claims 5, 12, 14, 18-19 and 22, applicant admitted prior art discloses a compensation method and circuit for a MEMS sensor. Applicant admitted prior art does not disclose a memory means periodically storing a feedback voltage in periods alternating with the periods of introducing a compensation voltage, and a linear amplifier for amplifying the feedback with a negative gain. Poduje discloses a compensation system (80 in Figure 2) comprising a memory means (capacitor 84 in Figure 2) connected to the feedback stage for periodically storing the feedback voltage in periods alternating with the periods of introducing the compensation voltage, and a linear amplifier (amplifier 88) with a negative gain for outputting the compensation voltage. It

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would have been obvious to a person of ordinary skill in the art at the time of the invention to modify applicant admitted prior art to use the compensation system, as taught by Poduje, for the same reason as stated above for the rejection of claims 1, 11, 17 and 20.

***Allowable Subject Matter***

3. Claims 6, 13, 15-16 and 23 are objected to as being dependent upon a rejected base claim (claims 1, 11 and 20), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ko et al. (U. S. Patent No. 4, 287, 471)-- Strip center line sensor.

Piso (U. S. Patent No. 4, 208, 625)-- Capacitive measurement system with compensation circuit. The compensating signal are digitally stored.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (703) 305-3360. The examiner can normally be reached on 8:30am-5pm Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, N. Le can be reached on (703) 308-0750.

The official Fax numbers for the organization are (703-872-9318) Before-Final

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and (703-872-9319) After-Final Office actions. Any inquiry of a general nature relating to this application should be directed to the receptionist at (703) 305-4900.

AH

June 18, 2003



N. Le

Supervisory Patent Examiner  
Technology Center 2800